

# XV Supercapacitor

## Cylindrical snap-in



### Features and benefits

- Over 10-year operating life at room temperature
- Ultra low ESR for high power density
- Large capacitance for high energy density
- Long cycle life
- UL Recognized

### Applications

- Hybrid battery or fuel cell systems
- High pulse current applications
- UPS / hold up power

### Description

Eaton supercapacitors are unique, ultra-high capacitance devices utilizing electrochemical double layer capacitor (EDLC) construction combined with new, high performance materials. This combination of advanced technologies allows Eaton to offer a wide variety of capacitor solutions tailored to specific applications that range from a few microamps for several days to several amps for milliseconds.

## Specifications

Capacitance	300 F to 600 F
Working voltage	2.7 V
Surge voltage	2.85 V
Capacitance tolerance	-5% to +10%
Operating temperature range	-40 °C to +65 °C
Extended operating temperature range	-40 °C to +85 °C (with voltage derating to 2.3 V @ +85 °C)

## Standard Product<sup>1</sup>

Capacitance (F)	Part Number	Max. initial DC ESR (mΩ) (Equivalent Series Resistance)	Max continuous current <sup>2</sup> (A)	Peak current <sup>3</sup> (A)	Max leakage current <sup>4</sup> (mA)	Max power <sup>5</sup> (W)	Stored energy <sup>6</sup> (Wh)	Typical mass (g)
300	XV3550-2R7307-R	4.5	20	160	0.60	410	0.30	62
400	XV3560-2R7407-R	3.2	26	220	0.85	570	0.41	72
600	XV3585-2R7607-R	2.6	33	320	1.30	790	0.60	108

1. Capacitance, ESR and Leakage current are all measured according to IEC 62391-1 at +20 °C

2. 15 °C Temperature Rise

3. Peak Current is for 1 second =  $1/2 \text{ Working Voltage} \times \text{Capacitance} / (1 + \text{DC ESR} \times \text{Capacitance})$

4. Leakage current measured after 72 hours, +20 °C

5. Max. Power =  $\text{Working Voltage}^2 / 4 / \text{DC ESR}$

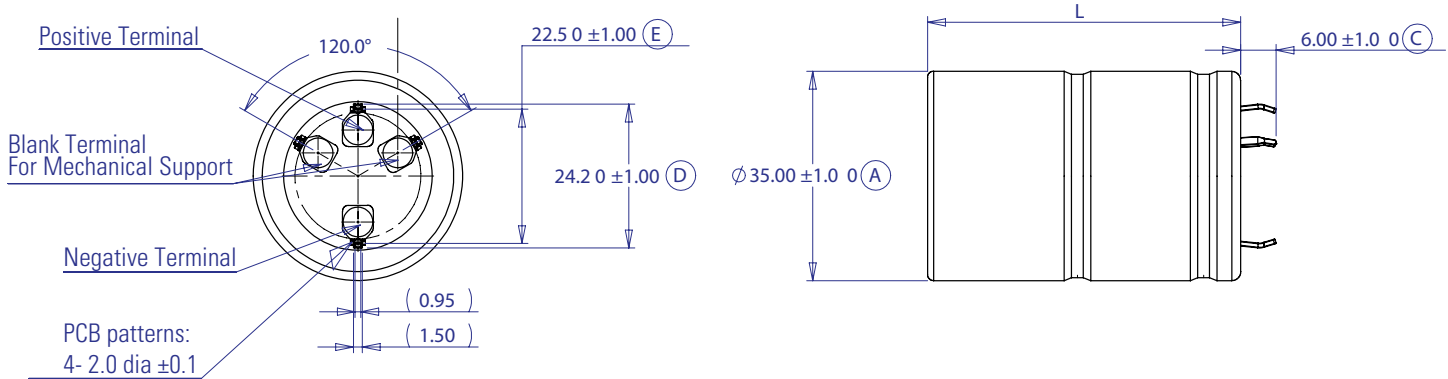
6. Stored energy =  $1/2 \text{ Capacitance} \times \text{Working Voltage}^2 / 3600$

## Performance

Parameter		Capacitance Change (% of initial value)	ESR (% of max. initial value)
Life			
@ Max. operating voltage and temp)	1500 hours	≤ 20%	≤ 200%
Charge/discharge cycling <sup>1</sup>	500,000	≤ 20%	≤ 200%
Storage Life- uncharged			
-40 °C to +65 °C	1500 hours	≤ 20%	≤ 200%
≤ 30 °C	3 years	≤ 5%	≤ 10%

1. Cycling between max operating and 50% of max operating voltage at room temperature

**Dimensions (mm)**



Part Number	L ± 1.0
XV3550-2R7307-R	53
XV3560-2R7407-R	63
XV3585-2R7607-R	87.5

**Part Numbering System**

XV	3560	-	2R7	40	7	-R
Family Code	Size reference- mm Diameter      Length		Voltage (V) R = Decimal	Capacitance (µF) Value      Multiplier		Standard product
XV = Family Code	35      60		2R7= 2.7 V	Example: 407= 40 x 10 <sup>7</sup> µF or 400 F		

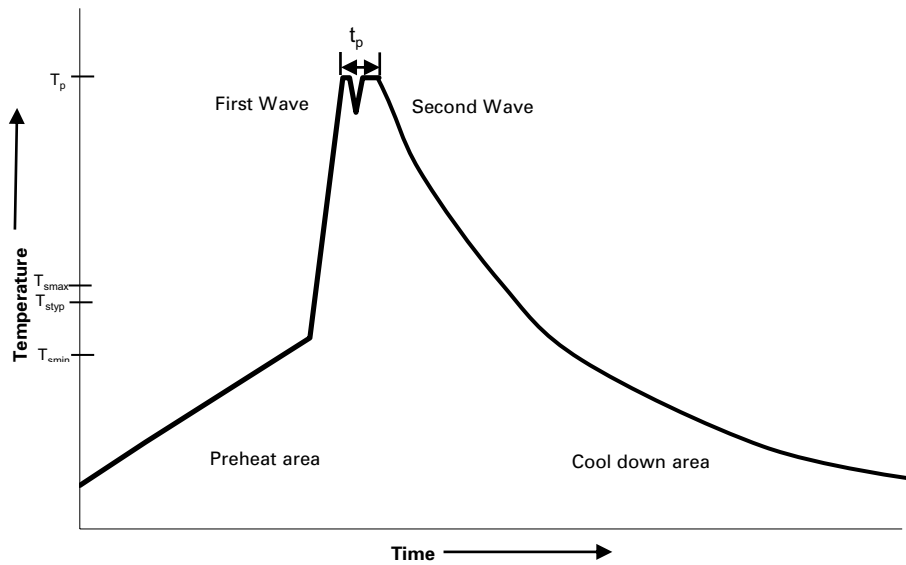
**Packaging Information**

- Standard packaging: 20 pieces per box

**Part Marking**

- Manufacturer
- Capacitance (F)
- Max operating voltage (V)
- Series code (or part number)
- Polarity

### Wave solder profile



Profile Feature	Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and soak	• Temperature max. ( $T_{smax}$ ) • Time max.	100 °C 60 seconds
$\Delta$ preheat to max Temperature	160 °C max.	160 °C max.
Peak temperature ( $T_p$ )*	220 °C – 260 °C	250 °C – 260 °C
Time at peak temperature ( $t_p$ )	10 seconds max 5 seconds max each wave	10 seconds max 5 seconds max each wave
Ramp-down rate	~ 2 K/s min ~3.5 K/s typ ~5 K/s max	~ 2 K/s min ~3.5 K/s typ ~5 K/s max
Time 25 °C to 25 °C	4 minutes	4 minutes

### Manual solder

+350 °C, 4-5 seconds. (by soldering iron), generally manual, hand soldering is not recommended.

### Cleaning/Washing

Avoid cleaning of circuit boards, however if the circuit board must be cleaned use static or ultrasonic immersion in a standard circuit board cleaning fluid for no more than 5 minutes and a maximum temperature of +60 °C. Afterwards thoroughly rinse and dry the circuit boards. In general, treat supercapacitors in the same manner you would an aluminum electrolytic capacitor.

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